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Current Economic Analysis I-27

Industrial Fishery Products

Market Review and Outlook

Economic and Marketing Research Division
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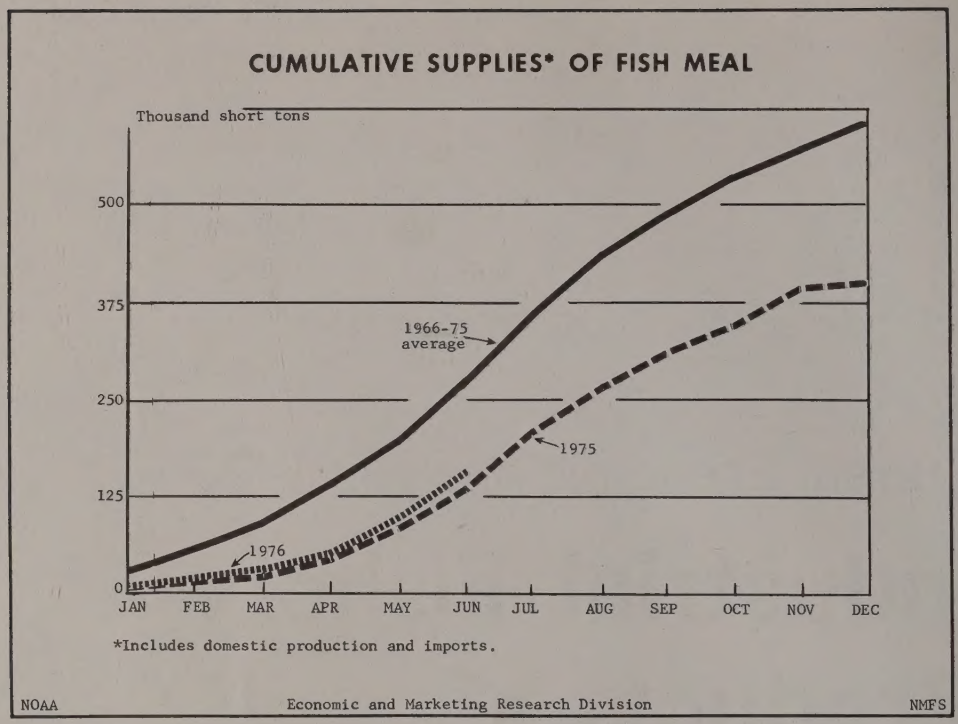

Figure 1

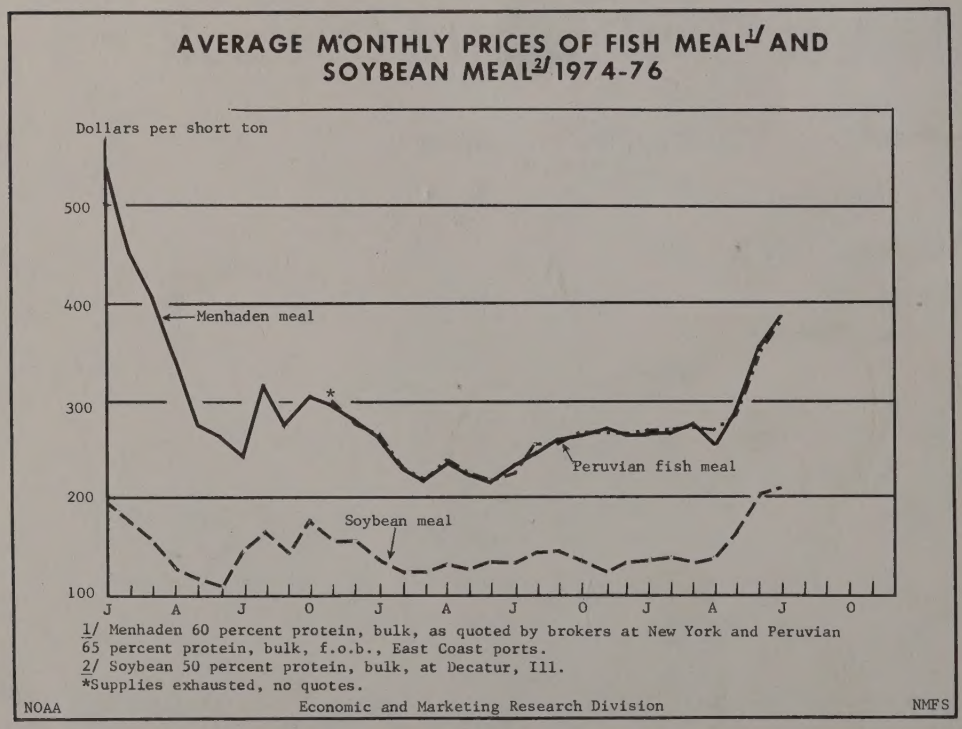

Figure 2

INDUSTRIAL FISHERY PRODUCTS

MARKET REVIEW AND OUTLOOK

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SUMMARY

Markets for industrial fishery products during the first half of 1976 were generally characterized by low supplies, rising demand and higher prices. Supplies have been particularly low for fish meal, down as much as 50 percent from historical averages. Imports of fish meal nearly doubled the quantity received last year, but that total was still only a fraction of the amounts imported before 1973. Domestic production of fish meal and solubles were off sharply from a year ago, down 10 and 15 percent, respectively.

Supplies of fish oil, on the other hand, have been at more normal levels. Although domestic production of fish oil was below a year earlier, relatively high carryover stocks and sharply reduced exports helped to maintain the level of supplies.

The favorable competitive position of prices for fish meal and solubles relative to those for competing feed ingredients, expanded chick placements, and the resulting greater numbers of broilers on feed have been major factors in the relatively strong demand for industrial fishery products this year. Prices of fish meal and solubles, therefore, moved up rapidly during the first half.

The prices of fish meal relative to competing feed ingredients are expected to keep sales relatively high in the second half of the year. However, prices will move down somewhat as supplies improve. Domestic production may drop further, but relatively strong demand and higher prices in the United States than overseas will attract more imports of fish meal and will reduce exports of both fish meal and oil.

FISH MEAL

REVIEW

The market picture for fish meal brightened significantly during the first half of 1976. Limited but improving supplies of fish meal in the United States, and increasing demand for protein meals here and abroad stimulated unusually large increases in the prices of soybean and fish meal. Price increases for fish meal have been especially steep since April. The average price received by producers of menhaden meal (60 percent protein) in July was $385 per short ton, $132 above the April level and about $150 more than a year earlier (table 1, fig. 1 and 2).

Domestic supplies continued to improve from the low levels of a year ago as a major increase in imports more than offset a slight decline in domestic production. The total of domestic production and imports increased to 153,100 short tons or about 15 percent above a year ago, but was still 44 percent below average annual quantities available during the past 10 years (fig. 3).

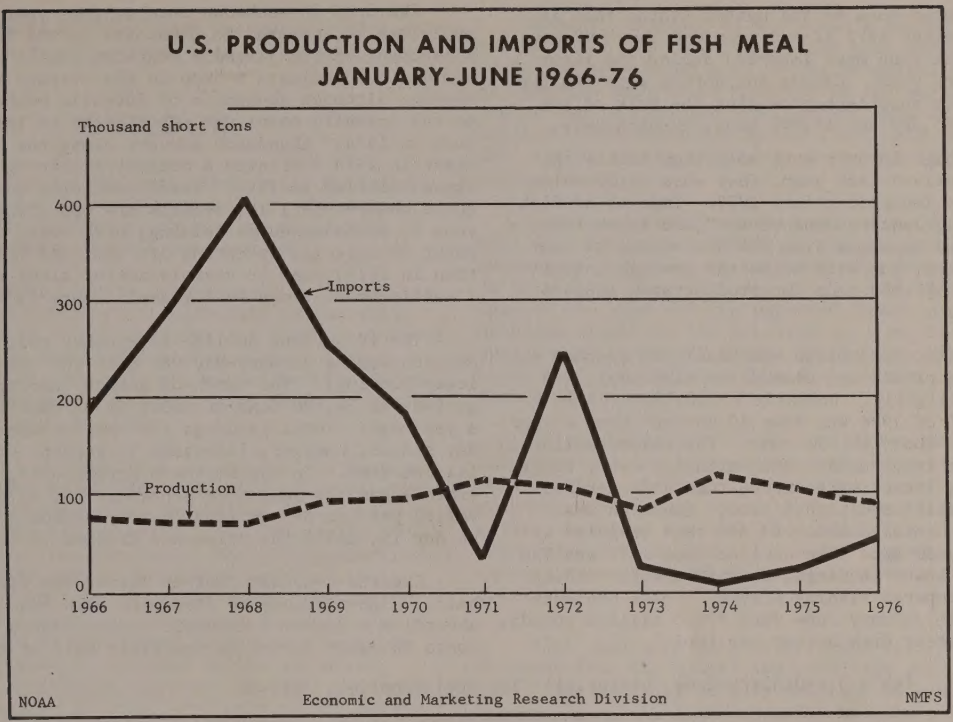
The present strength in the fish meal market, as reflected in the recent price increases, has also been the result of the increasing competitiveness of fish meal in protein ingredients markets, a significant increase in chick placements, and relatively short supplies in world markets. Prices of soybean meal recently have recorded proportionately greater increases than fish meal prices, thereby causing the price ratio of Peruvian fish meal to soybean meal to decline from 1.98 to 1.76 from April to June. 1/ The rapid rise in soybean meal prices was in response to a significant increase in the demand for that product subsequent to projections by USDA that production of soybean meal would fall short of demand in 1977. Soybean plantings in the United States this year are estimated to be 10 percent below a year earlier.

Expanded chick placements and larger numbers of broilers on feed have been particularly instrumental in improving the demand for fish meal. The favorable relationship between broiler production, marketing costs, and market price, according to a USDA report, has prompted producers to increase placements. 2/ During the first half of the year chick placements increased by 169 million from the same period in 1975.

Table 1.--Prices and price ratio of menhaden to soybean meal, June 1959 to 1976, and chick placement, January-June, 1959-76

Year	June wholesale price				Menhaden soybean meal price ratio	January-June chick placement
	Menhaden meal 1/		Soybean meal 2/			
	Actual	In 1972 dollars 3/	Actual	In 1972 dollars 3/		
	Dollars per short tons				Price ratio	Million birds
1959	129.9	192.4	61.9	91.7	2.10	896.5
1960	94.1	137.0	57.6	83.9	1.63	898.1
1961	116.9	168.7	71.5	103.2	1.63	1,029.2
1962	123.0	174.3	73.1	103.6	1.68	1,059.3
1963	125.0	174.6	76.1	106.3	1.66	1,086.5
1964	129.8	178.5	73.2	100.7	1.77	1,134.8
1965	160.9	216.5	85.1	114.5	1.89	1,216.1
1966	160.4	209.0	101.0	131.6	1.59	1,341.2
1967	139.0	175.9	87.2	110.4	1.59	1,364.6
1968	149.0	180.4	89.1	107.9	1.67	1,365.4
1969	172.6	199.0	88.2	101.7	1.96	1,454.6
1970	193.8	212.1	82.7	90.5	2.34	1,603.0
1971	153.6	160.0	87.6	91.2	1.75	1,538.5
1972	175.0	175.0	104.9	104.9	1.67	1,663.7
1973	508.1	479.7	450.0	424.8	1.13	1,577.8
1974	263.1	226.4	110.5	95.1	2.38	1,606.5
1975	218.8	173.1	130.8	103.5	1.67	1,526.1
1976	353.0	271.5	200.3	154.1	1.76	1,695.4

1/ 60 percent protein. Average price reported by brokers at New York City.
2/ 50 percent protein. Average price reported at Decatur, Ill.
3/ Actual price devided by the implicit price deflator for GNP (1972=100).
Source: For Soybean prices: U.S. Fats and Oil Situation, UDSA. For chick placements: Delmarva Broiler Reports U.S. Department of Agriculture, Statistical Reporting Service, and Poultry and Egg Situation, U.S. Department of Agriculture, Economic Research Service.



An additional contributing factor to higher fish meal prices was reduced world supplies, which have fallen somewhat short of quantities demanded. Production, exports, and stocks of fish meal by the six major exporting countries in the first 3 months of the year were down 12, 32, and 37 percent, respectively, from a year earlier. FEO member countries exported about 200,100 metric tons of fish meal in January-March compared with 296,800 tons the year before. 3/ Although statistics for individual FEO countries are not available, world supplies continued to be short in April and May.

Through May, the shortage of supply was primarily the result of poor fishing in Peru and Iceland, although Norway and Chile recorded considerable increases in production and exports. Peru, the major producer of fish meal, had production and exports well below historical levels and off 30 and 51 percent, respectively, from a year earlier (table 2).

The anchovy fishing season in Peru started on March 15, but closed on April 26 from Calao northward, because over 80 percent of the anchovy being caught in that area were below the minimum permitted size. Resumption of fish was authorized in the area on June 17 on the recommendation of the Peruvian Sea Institute after it became apparent that the fish had grown to an adequate size.

Table 2.--Anchovy catch, fish meal production, fish meal exports, and May 31 stocks in Peru, January-May 1975-76

Component	1975	1976	Change
	-Thousand metric tons-		-Percent-
Anchovy catch	2,946.0	2,179.0	- 0.26
Fish meal production	661.1	464.4	- .36
Exports	231.9	114.1	- .51
Ending stocks (May 31)	591.1	353.0	- .40

Supplies Improve

Total domestic supplies of fish meal increased substantially from a year earlier. The 153,100 tons available was 15 percent above a year ago, but was still low compared to the 1966-75 average of 271,800 short tons.

Higher demand and prices of fish meal prompted an increase in imports to the United States, despite an early drop in overall production and exports of FEO fish meal. Although experiencing early production problems and a late fishing start,

Peru exported more to the United States than in any year since 1972 4/ and provided about 47 percent of all fish meal imported during the first half of the year. Canada and Norway were the two other major suppliers providing the bulk of the balance, 15,200 and 12,600 tons, respectively.

Although imports were more than double the amount received last year, they were still below the volume imported before 1973. Imports of fish meal during January-June were 57,000 short tons; a substantial increase from the low volume of the past 3 years, but well below the average annual volume of 177,400 tons imported between 1966-75 (table 3).

Domestic production was unable to respond to increasing prices and demand for fish meal, and declined slightly. Domestic production in the first half of 1976 was down 10 percent from a year earlier to about 96,100 tons. The major decline in output was in menhaden meal, although every other fish meal, including anchovy, tuna and mackerel, and unclassified declined also. Menhaden meal production totaled about 63,500 tons compared with 67,700 a year ago. The decline from 1975 was the result of lower landings, as unfavorable fishing weather hampered fishing effort. Total menhaden landings in January-June were 579.6 million pounds, down 6 percent from a year earlier.

The drop in menhaden catches this year apparently was not related to a decline in the resource. Assessment of the juvenile menhaden stocks a year ago did not indicate a drop in the overall resource, although abundance of juvenile menhaden on the Atlantic coast was reported to be less than in 1974. Abundance surveys along the Gulf coast in 1975 indicated a moderately strong year-class, similar to 1974. Based partially on the above observation, 141 vessels are operating this year in menhaden purse seining, with most, or about 83 vessels, operating off the Gulf (12 more than in 1974), and 58 vessels active along the Atlantic coast (down by 5 vessels since 1974).

The 19 percent decline in anchovy meal production during January-May was also the result of lower landings. The catch of anchovy during this period was 54,190 tons or about 18 percent below a year ago. Total landings for the September to May season, however, increased 21 percent to 141,036 tons. In the Southern permit area, fishermen began the season on September 15, 1975 at $32.50 per ton of raw fish, but by season's end on May 15, 1975, the price had dropped to $31.

Exports declined further during the first half. Higher prices of fish meal here than abroad, and improved domestic demand caused exports to again shrink in the first half of the

Table 3.--January-June, historical fish meal supplies, 1959-76

Year	Fish meal production			Imports			Total Supplies
	Menhaden	Other species	Total	From Peru	From other countries	Total	
	Thousand short tons						
1959	69.9	23.2	93.1	36.9	63.8	100.7	193.8
1960	59.0	24.3	80.3	32.9	33.5	66.4	146.7
1961	83.9	18.7	102.6	74.0	33.8	107.8	210.4
1962	89.8	31.9	121.7	126.4	14.5	140.9	262.6
1963	69.5	22.5	92.0	129.3	45.9	175.2	267.2
1964	65.4	31.2	96.6	205.1	51.3	256.4	353.1
1965	66.6	28.3	94.9	178.9	31.0	209.9	304.8
1966	45.5	33.8	79.3	125.7	68.6	194.3	273.6
1967	38.4	36.9	75.3	204.0	86.0	290.0	365.3
1968	38.1	33.3	71.4	324.8	83.4	408.2	479.6
1969	55.9	37.3	93.2	172.5	84.3	256.8	349.9
1970	66.7	29.0	95.7	128.9	55.2	184.1	279.8
1971	85.8	28.9	114.7	110.0	24.9	134.9	249.6
1972	68.0	37.0	105.0	224.5	22.0	246.5	351.6
1973	49.2	37.7	86.9	14.0	9.2	23.2	110.1
1974	75.0	41.4	116.4	-	9.0	9.0	125.4
1975	67.7	38.7	106.4	9.2	17.8	27.0	133.3
1976	63.5	32.6	96.1	26.7	30.3	57.0	153.1

Note: Figures may not add to total because of rounding.
1976 figures subject to revision.

year. Exports declined from the peak in 1974 of 28,000 tons to little less than 5,500 tons this year.

OUTLOOK

U.S. feed mixers most likely will face more ample supplies in the second half as world production and, therefore, exports to the United States, increase above a year earlier.

Increased imports are expected from Peru, Canada, and Norway on the strength of improving production in those countries and higher prices of fish meal in the United States than in Europe. Recent prices show that the spread between domestic and European prices had increased from $15 in June to $45 in July (fig. 4).

FEO world production is expected to improve, but lower stocks of fish meal will cause exports to countries other than the United States to either remain stable or decline. This will be particularly true for Peru. The 1976 production of Peruvian fish meal is projected to be at least 180,000 metric tons above last year. We expect that all the gain will be exported. While Peruvian exports to the United States will probably increase, those to the rest of the world are projected to decline, because fish meal stocks in Peru on January 1, 1976, were only 40,000 metric tons in contrast to 219,600 tons the year before.

Norway, however, as the world's second largest producer and exporter of fish meal is expected to compensate for most of the potential decline in Peruvian exports to the rest of the world. This projection is based on a 50 percent gain in Norway's catch for reduction during the first half and abundant stocks at the beginning of the year (114,200 metric tons).

We expect that domestic production of fish meal will decrease slightly in the second half because of a decline in menhaden meal production. In line with lower menhaden landings in the first half of the year and the reported lower juvenile menhaden stocks in the Atlantic 5/, our forecast projects an output of about 118,000 tons of menhaden meal for the second half--4 percent less than a year ago 6/.

On the basis of present conditions, we expect a further decline in menhaden meal production during 1977. Although the menhaden fleet has increased considerably since 1974, as has fishing effort, landings have declined slightly. Landings, therefore, will remain at or below current levels, causing the additional declines in fish meal production.

Fish meal used in poultry feeds will probably increase from the quantities used last year. The gain, however, will be only moderate because increases in chick placements will be only a little greater than the relatively high level of a year

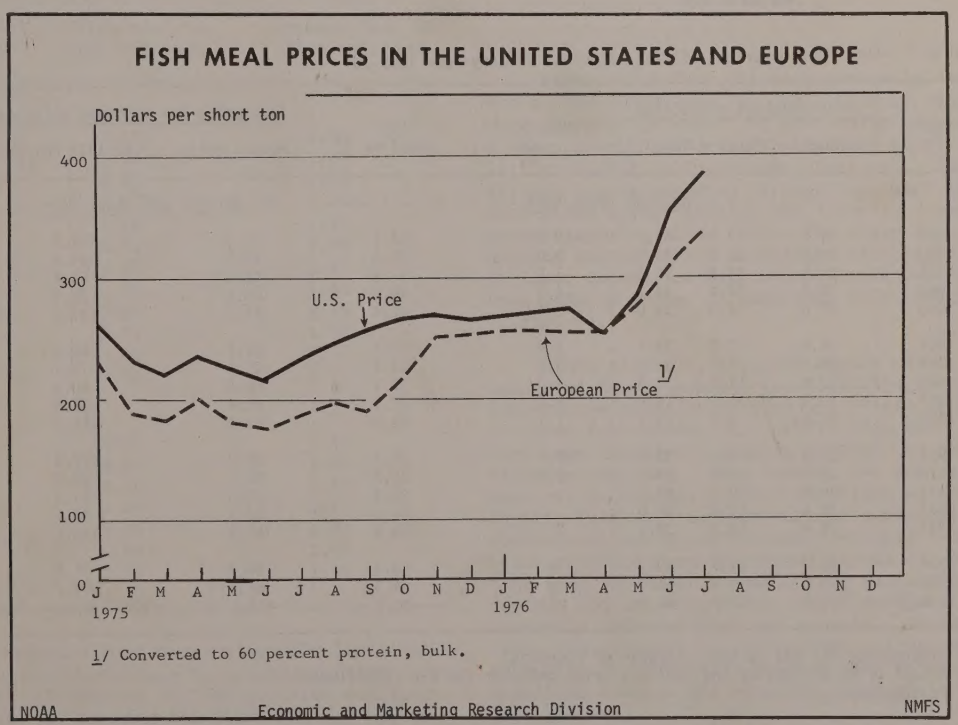


Figure 4

ago. However, if the price differential between fish and soybean meal further narrows, fish meal use will expand accordingly.

Fish meal prices during the rest of the year will likely decline from current levels in response to expected ample world vegetable meal supplies and reduced prices of soybean meal. Despite recent USSR soybean purchases, increased soybean meal exports to the rest of the world by the United States and the recent severe drought in Europe, high carryover reserves of soybeans and an expected good, but slightly lower crop this year may reduce prices somewhat. Domestic soybean stocks as of June 1 were the highest on record, and the Brazilian soybean crop just harvested was reported at about 11.6 million metric tons, or 20 percent above 1975. Worldwide, the gain in Brazilian production is expected to offset about half of the projected reduction in U.S. soybean production this year.

1/ Ratios between prices paid for fish meal and other high protein feeds help explain many feed mixers' decisions concerning the relative component of feed. Thus, a low price ratio for fish meal-soybean meal would provide an incentive for some feed mixers to use more fish meal as part of feed for broilers. These ratios often impose limits on utilization decisions by users and help serve as a barometer for further fish meal use

2/ Poultry and Egg Situation, U.S. Dept. of Agriculture, June 1976, p. 10.

3/ Fishmeal Exporters Organization.

4/ Record year, almost 90 percent of all imports came from Peru.

5/ Forecast of 1976 Atlantic and Gulf menhaden purse-seine catches, Robert B. Capoton, NMFS Atlantic Estuarine Fishery Center, Beaufort, N.C., April 29, 1976.

6/ Based on a regression equation where total menhaden meal output during the year is determined by the first 6 months of menhaden landings.

$$X = 59.9 + .2105 \text{ (menhaden landings)}$$
$$(t = 5.937)\ (r = .838)$$
$$\text{(st. error - .0354)}$$

Our forecast falls within the range of the forecast released by NMFS, Atlantic Estuarine Fishery Center, Beaufort, N.C.

Table 4.--Supplies and prices of fish solubles, January-June 1959-76

Year	Fish solubles production			Imports	Total supplies 1/	June price for menhaden solubles	
	Menhaden	Other	Total 1/			Actual price	In 1972 dollars 2/
	Thousand short tons					Dollars per short ton	
1959	31.6	12.7	44.3	9.8	54.1	76.0	112.6
1960	21.9	11.9	33.8	2.5	36.3	37.5	54.6
1961	24.5	12.1	36.6	1.2	37.8	45.3	65.4
1962	30.3	14.4	44.7	4.3	49.0	53.1	75.3
1963	27.0	12.0	39.0	2.4	41.4	61.2	85.5
1964	26.6	12.5	39.1	2.0	41.1	62.2	85.5
1965	25.8	9.7	35.5	3.2	38.7	55.8	75.1
1966	21.9	11.9	33.8	3.3	37.1	68.8	89.6
1967	17.8	11.9	29.8	2.9	32.7	64.4	81.5
1968	14.9	8.8	23.7	1.1	24.8	53.8	65.2
1969	22.9	9.5	32.4	0.1	32.4	49.8	57.4
1970	23.7	10.6	34.2	0.4	34.8	54.3	59.4
1971	34.5	10.1	44.6	-	44.6	49.0	51.0
1972	30.4	15.6	46.0	-	46.0	40.1	40.1
1973	26.4	12.8	39.2	0.1	39.4	142.5	134.5
1974	36.2	14.7	50.9	-	50.9	94.8	81.6
1975	35.6	19.3	54.9	-	54.9	64.1	50.7
1976 3/	29.1	17.7	46.8	0.1	46.9	118.5	91.2

1/ Figures may not add to total because of rounding.
2/ Actual price divided by the implicit price deflator for GNP (1972=100).
3/ Preliminary.

FISH SOLUBLES

REVIEW

Markets for fish solubles have improved considerably this year as indicated by the nearly twofold increase in prices. By June, the $118.50 per short ton reported for menhaden solubles was 26 percent above the previous month and 85 percent above the unusually low price of a year earlier (table 4).

The increasing strength of the fish solubles market in the latter half of 1975 and the first half of this year was related to improving demand and relatively low supplies of solubles. Although statistics concerning solubles use are not available, the fact that prices of solubles have kept pace with or exceeded those for competing products leads us to conclude that demand has improved this year. Solubles price increases, for example, have generally matched those for soybean meal since October 1975 (table 5). Furthermore, the gains recorded for solubles have greatly exceeded those for fish meal, causing the price ratio of fish meal to solubles to decline from a high of 3.98 in August 1975 to 2.98 in June 1976.

Table 5.--Price ratios of fish meal and soybean meal to fish solubles, monthly 1975 and 1976

Month	Fish meal to Fish solubles	Soybean meal to Fish solubles
1975		
January	3.05	1.60
February	2.98	1.64
March	2.94	1.69
April	3.23	1.79
May	3.18	1.81
June	3.41	2.04
July	3.69	2.11
August	3.98	2.33
September	3.92	2.19
October	3.70	1.89
November	3.68	1.73
December	3.56	1.77
1976		
January	3.58	1.82
February	3.60	1.85
March	3.39	1.68
April	3.19	1.71
May	3.02	1.71
June	2.98	1.69
July	2.77	1.50

Low supplies have been an equally important factor in the improvement in solubles prices this year. Production of fish solubles declined about 15 percent during the first half to 46,800 short tons. The lower quantity produced was the result of a sharp drop in menhaden landings. Unfavorable weather in May, the first full month of the season, caused production to be cut in half from the 20,300 short tons produced in 1975.

OUTLOOK

Relatively greater increases in the price of fish solubles compared to other protein meal ingredients have made the use of fish solubles somewhat less attractive than a year ago. The average price of menhaden solubles in July, for example, was $138.75 compared to $63.50 a year earlier, and the price ratio of menhaden meal to solubles declined to 2.77. Nevertheless, prices of fish solubles with about 31-percent protein content continue to be competitive with the price of other feeds. Demand, therefore, is expected to remain good during the rest of the year.

FISH OIL

REVIEW

Markets for fish oil were generally depressed during the first half of 1976, although somewhat improved in June. Of particular concern was a sharp drop in exports, the largest single outlet for domestically produced fish oil. The 31 million pounds exported through June were 40 percent below a year earlier and were the lowest amount exported since 1968. The sharp drop in exports was primarily associated with significantly lower demand for fish oil overseas resulting from reduced prices of competing oils (table 6 and 7, fig. 5).

Since mid-1975, sluggish export demand has been tied to the gradual deterioration of the competitive position of fish oil prices relative to those for soybean oil. While fish oil prices have been relatively stable, soybean oil prices steadily declined. As a result, the use of soybean oil in foreign markets has risen sharply. Reports indicate that substantial quantities of soybean oil are being produced overseas from soybeans exported from the United States (up 33 percent from September to May). The increased production and use of soybean oil, therefore, have adversely affected fish oil exports. In addition, the expanded use of soybean oil is reflected by the substantially greater quantities of Brazilian soybean oil recently received in European markets.

Table 6.--Production and utilization of fish oil, January-June 1959-76

Year	Fish oil production 1/			Exports	U.S. industrial utilization	Total utilization 2/	Net stocks change 3/
	Menhaden	Other	Total				
	Million pounds						
1959	53.9	7.1	61.0	49.3	28.7	78.0	- 17.0
1960	47.8	7.1	54.9	52.8	26.2	79.0	- 24.1
1961	82.9	4.8	87.7	68.2	31.6	99.8	- 12.1
1962	88.3	5.8	94.1	62.9	32.6	95.5	- 1.4
1963	64.9	3.8	68.7	97.8	25.6	123.4	- 54.7
1964	71.1	5.7	76.8	56.1	24.5	80.6	- 3.8
1965	72.0	4.5	76.5	30.1	20.1	50.2	+ 26.3
1966	54.9	5.4	60.3	47.2	20.2	67.4	- 7.1
1967	28.5	6.2	34.3	29.3	19.0	48.3	- 13.6
1968	31.7	5.7	37.4	19.6	15.8	35.4	+ 2.0
1969	50.9	5.0	55.9	78.1	17.0	95.1	- 39.2
1970	62.6	3.7	66.3	36.6	17.6	54.2	+ 12.1
1971	92.9	7.1	100.0	59.0	12.9	71.9	+ 28.1
1972	60.8	5.7	66.5	42.2	12.9	55.1	+ 11.4
1973	55.4	6.1	61.5	55.3	12.4	67.7	- 6.2
1974	80.1	6.4	86.5	44.5	16.3	60.8	+ 25.7
1975	76.3	9.4	85.7	51.8	14.8	66.5	+ 19.2
1976 4/	58.3	8.6	67.0	31.0	19.8	50.8	+ 16.2

1/ Excludes whale and sperm oil.
2/ Exports plus industrial utilization
3/ Production less exports and domestic industrial utilization.
4/ Preliminary.

Table 7.--Prices of menhaden and soybean oils, June 1959-76

Year	Menhaden oil 1/		Soybean oil 2/		Menhaden-soybean oil
	Actual	In 1972 dollars 3/	Actual	In 1972 dollars 3/	
	Cents per pound				Price ratio
1959	7.5	11.1	9.5	14.1	.79
1960	6.4	9.3	8.7	12.7	.74
1961	6.7	9.7	11.6	16.7	.58
1962	4.4	6.2	8.4	11.9	.52
1963	6.5	9.1	9.1	12.7	.71
1964	8.6	11.8	8.2	11.3	1.05
1965	9.2	12.4	10.2	13.7	.90
1966	9.6	12.5	11.2	14.6	.85
1967	7.0	8.8	9.8	12.4	.71
1968	5.2	6.3	7.8	9.4	.67
1969	5.2	6.0	7.8	9.0	.67
1970	10.2	11.3	11.1	12.1	.93
1971	8.0	8.3	12.8	13.3	.62
1972	6.8	6.8	10.7	10.7	.64
1973	11.8	11.1	19.3	18.2	.61
1974	25.0	21.5	31.6	27.2	.79
1975	13.0	10.3	23.3	18.4	.56
1976	15.4	11.8	17.3	13.3	.89

1/ Crude oil in tank cars at New York City.
2/ Crude oil in tank cars at Decatur, Ill.
3/ Actual price divided by the implicit price deflator for GNP (1972=100).
Source for soybean oil: USDA Fats & Oil Situation.

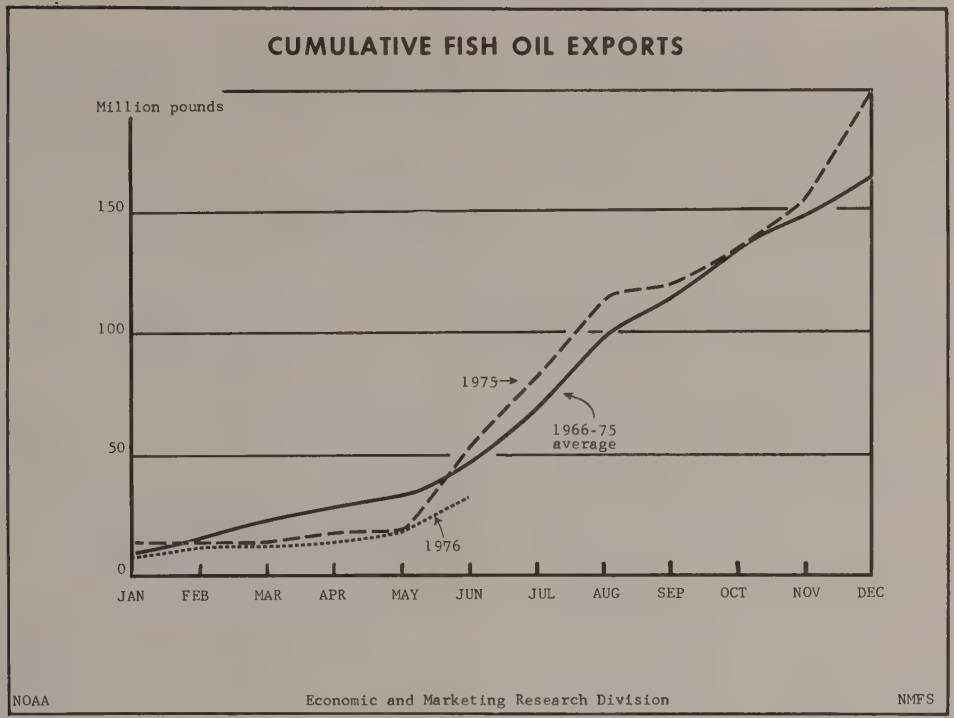


Figure 5

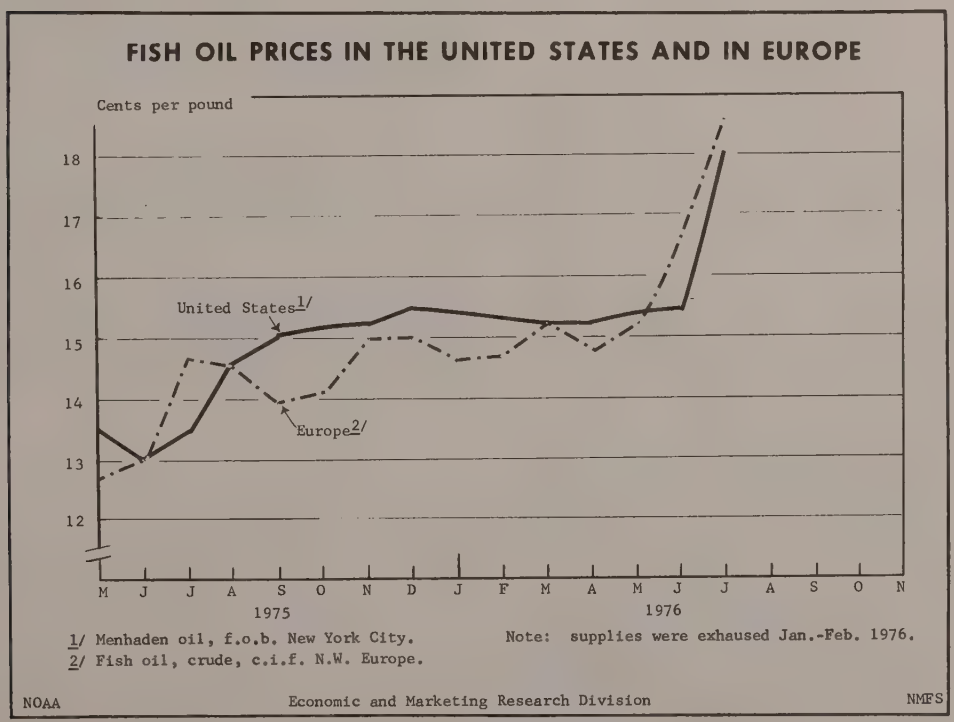


Figure 6

Relatively lower prices of fish oil in Europe have also been a major factor in the recent decline in exports. Whereas prices in Europe have traditionally been above those in the United States, they were fractionally lower during most of 1975 and 1976. By June, however, prices in Europe were again higher than in the United States (fig. 6, table 8).

Table 8.--Average monthly price of fish oil, 1975-76

Month	U.S. 1/	Europe 2/
	Cents per pound	
1975		
January	25.0	23.1
February	20.0	19.2
March	-	16.6
April	-	14.9
May	13.5	12.7
June	13.0	13.0
July	13.5	14.7
August	14.6	14.6
September	15.0	13.9
October	15.2	14.1
November	15.2	15.0
December	15.5	15.0
1976		
January	-	14.6
February	-	14.7
March	15.2	15.2
April	15.2	14.8
May	15.4	15.2
June	15.4	16.6
July	18.0	18.5

1/ Menhaden oil, crude tank cars; f.o.b. New York City.
2/ Fish oil, crude, cif NW. Europe.

In domestic markets, prices remained firm although well below those reported in 1974. The firm prices of fish oil despite sagging export demand, were related to higher domestic use and lower production in the United States and abroad.

Total industrial use of fish oil during the first half of the year rose a third to 19.8 million pounds. This gain was particularly notable in light of the declining competitive position of fish oil relative to soybean oil, and the record demand for soybean oil this year. Domestic disappearance of soybean oil rose 33 percent during the first quarter to 2,008 million pounds.

Domestic fish oil production during the first half fell 22 percent from the same period in 1975. Production during May, the first month of the menhaden season, was off an even greater 53 percent. The recent decline in domestic oil production was the result of lower menhaden landings in both the Atlantic and Gulf.

Production in Peru was also unusually low this year because of drastically reduced yields of oil. Due to the large proportion of small fish, the oil yield is down on the average by over 50 percent from a year ago. In 1975, the anchovy oil yield was an average 6.8 percent per ton of anchovy caught. Because of this development, after sales resumed in May, the Peruvian government in early June banned all fish oil exports for the rest of the year.

OUTLOOK

Fish oil production in the second half of 1976 will reflect the expected decline in fish meal production. About 152 million pounds of menhaden oil, or a decrease of 5 percent, will probably be produced in the second half. A slight increase is expected for other fish oils, such as tuna and mackerel, but that gain will not be high enough to compensate for the drop in menhaden oil output.

The expected decrease in domestic production will nevertheless result in greater stocks of domestic fish oil because continuing high supplies of coconut, palm, soybean, and other vegetable oils on the world market will limit fish oil exports. As fish oil stocks begin to build and vegetable oil supplies remain high, prices of fish oil will decline somewhat and will become more competitive with other oils as the year progresses. Prices for fish oil had already begun to drop by falling 1 cent to 17.5 cents per pound in the fourth week of July.

The Peruvian government's ban on fish oil exports is not expected to cause a world shortage of fish oil. Good landings of industrial fish in Norway this year will likely offset the decline in Peruvian exports of fish oil.

The long-run outlook is somewhat clouded by a proposed tax by the European Economic Community on vegetable, fish, and marine oil imports. The effect of this tax would be felt by all U.S. fish oil exporters because most of their exports are to the EEC.

STATISTICAL APPENDIX

Table A1.--Production, imports, and total supplies of fish meal in the United States, 1950-75

Year	Fish meal production						Imports	Total supplies
	Menhaden	Tuna and mackerel	Other 1/	Total	Shellfish 2/	Grand total		
	Thousand short tons							
1950	103.4	25.4	101.0	229.8	10.2	240.0	63.9	303.9
1951	115.5	23.2	60.2	198.9	10.9	209.8	128.5	338.3
1952	144.0	22.0	44.8	210.8	10.6	221.4	203.5	424.9
1953	174.8	20.0	34.3	229.1	9.7	238.8	131.5	370.3
1954	183.1	21.6	41.1	245.8	11.2	257.0	145.8	402.8
1955	190.6	23.4	41.5	255.5	9.0	264.5	98.0	362.5
1956	210.6	26.3	48.6	285.5	10.3	295.8	90.4	386.2
1957	172.4	25.7	56.5	254.6	9.5	264.1	81.2	345.3
1958	158.1	25.3	55.3	238.7	9.4	248.1	100.4	348.5
1959	223.9	25.4	47.5	296.8	9.8	306.6	132.9	439.5
1960	218.4	26.5	36.5	281.4	8.7	290.1	131.6	421.7
1961	247.6	21.2	31.7	300.5	10.8	311.3	217.8	529.1
1962	239.7	26.6	34.7	301.0	11.3	312.3	252.3	564.6
1963	184.2	27.0	36.8	248.0	7.9	255.9	376.3	632.2
1964	160.4	21.1	43.6	225.1	10.1	235.2	439.1	674.3
1965	176.0	25.4	41.1	242.5	11.5	254.0	270.6	524.6
1966	135.0	25.3	51.8	212.1	11.7	223.8	447.8	671.6
1967	119.1	25.5	56.9	201.5	9.7	211.2	651.5	862.7
1968	143.2	28.8	55.0	227.0	8.1	235.1	855.3	1,090.4
1969	159.5	26.9	57.8	244.2	8.4	252.6	358.4	611.0
1970	188.6	26.7	41.8	257.1	12.1	269.2	251.5	520.7
1971	221.0	29.3	32.6	282.9	9.9	292.8	283.2	576.1
1972	193.6	43.2	37.3	274.1	11.4	285.5	392.0	677.5
1973	188.8	43.6	46.7	279.1	8.4	287.5	68.5	356.0
1974	203.9	48.2	39.5	291.6	9.1	300.7	68.3	369.0
1975 3/	191.4	37.2	50.7	279.3	11.0	290.3	118.4	408.7

1/ Chiefly offal, waste and scrap fish from groundfish; to 1951 substantial Pacific sardine meal; since 1969 substantial anchovy meal.
2/ Chiefly crab meal with some shrimp meal.
3/ Data subject to revision.

Note: Figures may not add to total because of rounding.

Table A2.--Supplies, production, and imports of fish meal in the United States, by month, 1965-75 average, and 1975-76

Month	Supplies 1/			Production			Imports		
	1966-75 average	1975 3/	1976 3/	1966-75 average	1975 3/	1976 3/	1966-75 average	1975	1976
	Thousand short tons								
January	30.1	8.4	10.8	4.4	6.7	6.6	25.7	1.7	4.2
February	27.5	5.4	5.4	4.0	4.7	2.9	23.5	0.7	2.5
March	34.1	7.1	14.5	5.2	5.6	6.5	28.9	1.5	8.0
April	46.6	28.3	21.9	12.0	11.2	15.9	34.6	17.1	6.0
May	57.5	38.0	44.5	27.4	35.6	22.7	30.1	2.4	21.8
June	76.0	46.2	56.6	41.4	42.6	42.0	34.6	3.6	14.6
July	81.4	78.4		47.4	53.6		34.0	24.9	
August	73.6	52.7		41.6	38.4		32.0	14.3	
September	57.9	46.3		28.9	32.5		29.0	13.8	
October	45.7	36.7		18.6	23.3		27.1	13.4	
November	37.3	36.1		14.2	13.5		23.1	22.6	
December	36.4	14.3		9.6	11.8		26.8	2.5	
Total	604.1	397.7		254.7	279.3		349.5	118.4	

1/ Production plus imports; exports not deducted.
2/ Excludes meal made from shellfish.
3/ Preliminary.

Note: Figures may not add to total because rounding.

Table A3.--U.S. fish meal production by raw material source, 1975-76

Month	Source				Total
	Menhaden	Anchovy	Tuna and mackerel	Unclassified	
	Thousand short tons				
1975					
January	1/	3.1	2.6	1.0	6.7
February	-	1.5	2.4	0.9	4.7
March	-	0.7	3.6	1.3	5.6
April	3.2	3.4	3.3	1.4	11.2
May	27.5	3.3	2.2	2.6	35.6
June	37.0	-	3.5	2.1	42.6
Total January-June	67.7	12.0	17.6	9.2	106.4
Total 1975	191.4	27.7	37.2	23.0	279.3
1976					
January	0.3	3.3	2.1	0.9	6.6
February	-	0.4	1.8	0.7	2.9
March	-	2.0	3.4	1.2	6.5
April	8.8	3.4	2.5	1.3	15.9
May	17.5	0.8	2.3	2.1	22.7
June	36.9	-	3.0	2.1	42.0
Total January-June	63.5	9.8	15.1	7.8	96.1

1/ Included with unclassified.

Note: Data for 1976 subject to revision. Data exclude meal made from shellfish
Figures may not add to total because of rounding.

Table A4.--U.S. imports of fish meal by country of origin, 1975-76

Time period	Country of origin				Total 1/
	Canada	Peru	Norway	Other	
	Thousand short tons				
1975					
January	1.6	-	-	0.1	1.7
February	0.7	-	-	-	0.7
March	1.5	-	-	-	1.5
April	2.9	9.2	-	1/ 5.0	17.1
May	2.4	-	-	-	2.4
June	3.5	-	-	-	3.6
Total January-June	12.6	9.2	-	5.1	27.0
Total 1975	34.0	75.5	-	1/ 8.9	118.4
1976					
January	1.4	-	2.4	0.3	4.2
February	2.0	-	0.6	-	2.5
March	2.6	-	3.5	1.9	8.0
April	3.1	-	2.9	-	6.0
May	3.4	17.6	0.6	0.2	21.8
June	2.8	9.1	2.7	-	14.6
Total January-June	15.2	26.7	12.6	2.4	57.0

1/ Mostly imports from Chile.

Note: Figures may not add to total because of rounding.

Table A5.--U.S. exports of fish meal, by month, 1974-76

Month	1974	1975	1976
	Thousand short ton		
January	8.9	2.0	1.5
February	8.8	3.4	0.2
March	1.1	0.9	0.3
April	3.9	0.6	2.7
May	1.9	0.3	0.6
June	3.3	1.2	0.2
July	7.3	0.1	
August	8.9	0.1	
September	8.0	0.4	
October	1.7	0.8	
November	0.6	1.2	
December	1.0	0.9	
Total	55.5	11.8	

Note: Figures may not to total because of rounding.

Table A6.-- Peru: Anchovy catch, fish meal production, beginning stocks, total supply, total exports and exports to the United States, 1955-76

Year	Anchovy catch	Fish meal production	Beginning stocks	Total supplies	Total exports	Exports to the United States	Total U.S. fish meal imports	Imports from Peru as percentage of all U.S. imports
	Thousand metric tons					Percent	Thousand metric tons	Precent
1955	1/ 111	20.0	1.6	21.6	18.7	7.9	42.2	88.9	8.9
1956	1/ 172	31.0	0.7	31.7	27.8	7.0	25.2	82.0	8.5
1957	1/ 358	64.5	2.2	66.7	61.6	15.3	24.8	73.7	20.8
1958	1/ 706	127.0	1.2	128.2	105.8	30.2	28.5	91.0	33.2
1959	1/1,847	332.4	11.6	344.0	277.6	45.3	16.3	120.6	37.6
1960	2,940	558.3	45.9	604.2	507.0	61.8	12.2	119.4	51.8
1961	3,520	863.8	77.0	940.8	708.4	137.4	19.4	197.6	69.5
1962	6,690	1,120.8	156.8	1,277.6	1,055.9	168.9	16.0	228.9	73.8
1963	6,423	1,159.2	192.9	1,352.1	1,038.3	258.9	24.9	341.4	75.8
1964	8,863	1,552.2	167.0	1,719.2	1,426.1	315.7	22.1	398.3	79.3
1965	7,242	1,282.0	260.5	1,542.5	1,413.0	190.3	13.5	245.5	77.5
1966	8,530	1,470.5	237.4	1,707.9	1,302.0	251.0	19.3	406.2	61.8
1967	9,825	1,816.0	375.2	2,191.2	1,560.9	401.5	25.7	591.0	68.0
1968	10,263	1,922.0	600.3	2,522.2	2,083.2	576.9	27.7	775.9	74.4
1969	8,960	1,610.8	391.7	2,002.5	1,665.6	197.9	11.9	325.1	60.9
1970	12,383	2,253.6	306.9	2,560.5	1,872.8	139.0	7.4	228.2	60.1
1971	10,274	1,936.6	654.4	2,591.0	1,751.6	181.0	10.3	256.9	70.4
1972	4,447	900.9	786.0	1,686.9	1,528.2	319.6	20.9	355.6	89.9
1973	1,769	423.1	60.0	483.1	351.0	37.9	10.8	62.1	61.0
1974	3,580	914.0	51.9	965.8	631.6	26.6	4.2	62.0	49.9
1975	3,097	711.5	219.5	931.0	747.6	68.5	9.2	107.4	63.8
1976	1/ 4,500	1/900.0	40.1	1/940.1	1/750.0	1/105.0	1/ 14.0	1/ 200.0	1/ 52.5

1/ Estimated.

Sources: Peru's Fish Meal Industry, April 1969. Foreign Agricultural Service USDA.
EPCMAP/Peru. U.S. Embassy, Lima, April 28, 1976.

Table A7.--Production of fish meal in seven major exporting countries, 1974-75

Country	1974	1975	Percentage of total production	
			1974	1975
	Thousand metric tons		Percent	
Angola	62.6	1/ 52.2	3.0	2.9
Chile	144.1	124.4	7.0	6.8
Denmark	285.0	2/ 261.5	13.8	14.3
Iceland	101.3	117.1	4.9	6.4
Norway	319.9	325.2	15.5	17.8
Peru	900.4	697.9	43.6	38.3
South Africa	251.1	244.5	12.2	13.4
Total	2,064.4	1,823.1	100.0	100.0

1/ The first 9 months.
2/ Estimated.

Source: Fishmeal Exporters Organization.

Table A8.--Production of fish meal in seven major exporting countries, January-March, 1975-76

Country	1975	1976	Percentage of total production	
			1975	1976
	Thousand metric tons		Percent	
Angola	21.6	1/	3.3	-
Chile	26.3	50.4	4.0	9.0
Denmark	64.6	41.1	9.9	7.4
Iceland	82.0	53.7	12.6	9.6
Norway	61.0	133.5	9.3	24.0
Peru	332.9	211.2	51.0	37.9
South Africa	64.4	67.0	9.9	12.0
Total	652.8	556.9	100.0	100.0

1/ Not available.

Table A9.--Export of fish meal from FEO 1/ countries and Denmark, January-December, 1974-75

Country	1974	1975	Percentage of total production	
			1974	1975
	-Thousand metric tons-		Percent	
Angola	58.0	2/ 47.6	3.9	2.7
Chile	111.8	118.3	7.6	6.7
Denmark	247.9	275.7	16.8	15.6
Iceland	84.2	113.6	5.7	6.4
Norway	265.1	317.4	18.0	17.9
Peru	631.5	747.6	42.9	42.3
South Africa	73.4	148.2	5.0	8.4
Total	1,471.9	1,768.4	100.0	100.0

1/ Fishmeal Exporters Organization.
2/ The first 9 months.

Source: Fishmeal Exporters Organization.

Table A10.--Exports of fish meal from FEO countries, January- March 1975-76

Country	1975	1976	Percentage of total exports	
			1975	1976
	-Thousand metric tons-		Percent	
Angola	15.6	1/	5.2	-
Chile	30.7	43.0	10.3	21.5
Iceland	30.8	39.6	10.4	19.8
Norway	47.9	101.6	16.1	50.8
Peru	127.3	7.2	42.9	3.6
South Africa	44.5	8.7	15.0	4.3
Total	296.8	200.1	100.0	100.0

1/ Not available.

Table A11.--FEO exports of fish meal by country of destination, 1974-75

Country	FEO exports		Percentage of total FEO exports	
	1974	1975	1974	1975
	Thousand metric tons		Percent	
Belg./Holland	70.8	52.2	5.8	3.5
France	23.2	36.6	1.9	2.4
Germany, West	284.0	269.6	23.2	18.0
Italy	44.2	73.0	3.6	4.9
Portugal	15.9	24.4	1.3	1.6
Spain	40.3	16.7	3.3	1.1
Switzerland	10.7	16.5	0.9	1.1
UK/Eire	104.4	119.1	8.5	8.0
Scandinavian countries 1/	51.1	84.1	4.2	5.6
Socialist countries	379.6	355.4	31.0	23.8
U.S.S.R.	-	33.2	-	2.2
U.S.A.	33.5	77.9	2.7	5.2
Latin America 2/	50.3	112.9	4.1	7.6
Japan	19.6	71.7	1.6	4.8
Taiwan	18.2	36.0	1.5	2.4
Singapore	4.8	15.3	.4	1.0
Philippines	12.3	28.8	1.0	1.9
Iran	12.8	17.1	1.0	1.1
Australia	17.5	7.5	1.4	0.5
Others	32.9	45.7	2.7	3.0
Total	1,226.1	1,493.7	100.0	100.0

1/ Includes Denmark, Finland and Sweden.
2/ Includes Cuba.

Note: Figures may not add to total because of rounding.

Table A12.--FEO exports of fish meal by country of destination, January-March, 1975-76

Country	FEO exports		Percentage of total FEO exports	
	1975	1976 1/	1975	1976
	Thousand metric tons		Percent	
Belg./Holland	6.7	7.7	2.2	3.8
France	9.6	13.2	3.2	6.6
Germany, West	43.3	46.3	14.6	23.1
Italy	12.8	6.4	4.3	3.2
Portugal	8.8	1.2	3.0	0.6
Spain	16.8	1.1	5.6	0.5
Switzerland	4.0	3.0	1.3	1.5
UK/Eire	20.8	20.1	7.0	10.0
Scandinavian countries 2/	15.6	28.0	5.2	14.0
Socialist countries	77.4	41.2	26.0	20.6
U.S.S.R.	4.5	-	1.5	-
U.S.A.	4.5	-	1.5	-
Latin America 3/	19.6	0.2	6.6	0.1
Japan	18.7	3.0	6.3	1.5
Taiwan	8.1	0.7	2.7	0.3
Singapore	3.9	0.3	1.3	0.1
Philippines	7.0	6.7	2.4	3.3
Iran	-	6.9	-	3.4
Australia	1.4	2.9	0.5	1.4
Others	13.8	11.2	4.6	5.6
Total	297.3	200.1	100.0	100.0

1/ 1976 first quarter data for Angola not included.
2/ Includes Denmark, Finland and Sweden.
3/ Includes Cuba.

Note: Figures may not add to total because of rounding.

Table A13.--FEO fish meal stocks held January 1, 1975 and 1976

Country	1975	1976	Percentage of FEO total stocks	
			1975	1976
	Thousand metric tons		Percent	
Angola	13.3	18.5 1/	2.8	9.1
Chile	33.7	27.0	7.2	13.3
Iceland	15.4	1.8	3.3	0.9
Norway	128.8	114.2	27.4	56.1
Peru	219.6	40.1	46.7	19.7
South Africa	59.0	1.8	12.6	0.9
Total	469.8	203.4	100.0	100.0

1/ Includes stocks up through September 1975

Table A14.--FEO fish meal stocks held April 1, 1975 and 1976

Country	1975	1976	Percentage of FEO total stocks	
			1975	1976
	Thousand metric tons		Percent	
Angola	18.4	1/	2.8	-
Chile	28.9	32.3	4.4	7.8
Iceland	53.2	14.7	8.0	3.5
Norway	133.4	141.6	20.1	34.1
Peru	387.5	207.1	58.3	49.9
South Africa	42.7	19.6	6.4	4.7
Total	664.1	1/ 415.3	100.0	100.0

1/ 1976 Angola figures not available.

Table A15.--Broiler chick placements in 21 States, and average broiler price at the farm by month, 1974-76

Month	1974		1975		1976	
	Chicks placed	Broiler price	Chicks placed	Broiler price	Chicks placed	Broiler price
	Million	Cents/lb	Million	Cents/lb	Million	Cents/lb
January	298.9	21.5	273.5	24.2	299.8	24.3
February	242.8	23.4	228.5	24.6	246.4	25.2
March	254.1	22.2	237.4	23.7	264.1	24.4
April	252.0	21.0	241.3	23.4	272.1	23.7
May	314.3	20.5	301.6	24.6	339.6	24.7
June	244.3	19.0	243.8	27.4	273.4	24.3
July	269.0	20.5	291.2	30.3	327.4	
August	208.7	20.9	230.5	28.8		
September	197.5	22.8	224.1	29.8		
October	230.9	22.8	264.7	28.8		
November	205.8	24.2	227.5	27.2		
December	217.6	21.9	233.6	24.0		
Total placements and average price	2,935.9	21.7	2,997.7	26.0		

Note: Figures may not add to total because of rounding.

Sources: Delmarva Broiler Chick Report, U.S. Department of Agriculture, Statistical Reporting Service, and Poultry and Egg Situation, U.S. Department of Agriculture, Economic Research Service.

Table A16.--Wholesale prices for fish and soybean meals, 1950-75

Year	Menhaden 1/	Imported Peruvian 2/	Tuna and mackerel 3/	Soybean meal 4/	
				44 percent protein	50 percent protein
	Dollars per short ton				
1950	5/127.88	-	-	64.20	-
1951	5/129.55	-	-	67.90	-
1952	133.72	-	5/135.64	83.80	-
1953	133.27	-	5/139.31	64.30	-
1954	135.20	-	5/138.89	79.70	-
1955	135.97	-	5/144.08	56.85	-
1956	134.18	-	5/134.22	51.30	59.45
1957	129.71	5/133.99	5/126.58	47.05	53.90
1958	137.76	141.28	137.63	55.95	63.95
1959	128.06	145.37	129.10	56.45	61.90
1960	93.00	94.90	94.84	53.10	57.95
1961	117.30	110.30	109.90	63.15	69.15
1962	124.05	122.60	120.65	66.50	72.70
1963	125.75	120.85	117.13	72.50	78.60
1964	131.45	131.95	127.66	69.15	77.00
1965	168.50	154.63	157.75	71.45	80.75
1966	161.03	156.40	148.10	83.80	91.86
1967	136.53	130.15	129.60	76.45	83.45
1968	145.27	130.95	125.87	77.45	84.99
1969	174.33	157.10	146.15	74.50	82.91
1970	184.52	194.45	171.30	79.20	87.10
1971	158.00	166.10	141.10	77.85	83.80
1972	185.50	179.20	155.90	104.95	114.34
1973	478.19	451.72	396.35	238.36	264.34
1974	276.07	287.30	270.60	140.85	153.30
1975	239.14	249.72	227.41	124.05	133.38

1/ 60 percent protein. Average price quoted by brokers at New York City, weighted by monthly production of menhaden meal.
2/ 65 percent protein. Average f.o.b. East Coast ports price, weighted by monthly imports of Peruvian fish meal. (Bagged to July 1970 and bulk since August 1971).
3/ 60 percent protein. Average price quoted by brokers at Los Angeles, weighted by monthly production. (Bagged to 1970 and bulk since 1971).
4/ Simple average price at Decatur, Ill.
5/ Simple average.
Source: For soybean meal prices:
U.S. Fats and Oils Statistics 1950-75, U.S. Department of Agriculture.

Table A17.--Wholesale prices of fish and soybean meal in 1972 dollars 1/, 1950-75

Year	Menhaden	Imported Peruvian	Tuna and mackerel	Soybean 44 percent protein	Soybean 50 percent protein
	Dollars per short ton				
1950	238.40	-	-	119.69	-
1951	226.21	-	-	118.56	-
1952	230.55	-	233.86	144.48	-
1953	226.34	-	236.60	109.20	-
1954	226.50	-	232.69	133.52	-
1955	222.97	-	236.27	93.23	-
1956	213.36	-	213.39	81.56	94.52
1957	199.49	206.08	194.68	72.36	82.90
1958	208.54	213.87	208.34	84.70	96.80
1959	189.66	215.30	191.20	83.60	91.68
1960	135.43	138.20	138.11	77.33	84.39
1961	169.31	159.21	158.63	91.15	99.81
1962	175.83	173.78	171.01	94.26	103.05
1963	175.65	168.81	163.61	101.27	109.79
1964	180.79	181.47	175.57	95.10	105.90
1965	226.72	208.06	212.26	96.14	108.65
1966	209.78	203.75	192.94	109.17	119.67
1967	172.78	164.70	164.01	96.75	105.61
1968	175.94	158.59	152.44	93.80	102.93
1969	201.03	181.16	168.53	85.91	95.60
1970	201.97	212.84	187.50	86.69	95.34
1971	164.55	172.98	146.95	81.08	87.27
1972	185.50	179.20	155.90	104.95	114.34
1973	451.46	426.47	374.20	225.04	249.57
1974	237.58	247.24	232.87	121.21	131.93
1975	189.24	197.61	179.96	98.16	105.54

1/ Deflated by the implicit price deflator for GNP (1972 = 100).

Table A18.--Average monthly prices of soybean meal 1/ at Decatur, Ill., 1974-76

Month	1974	1975	1976
	- - - -Dollars per short ton - - - -		
January	192.40	137.90	136.25
February	175.20	126.90	139.25
March	160.40	126.50	135.60
April	130.40	131.80	136.40
May	120.00	129.00	161.75
June	110.50	130.75	200.30
July	147.10	134.20	207.88
August	165.90	144.20	
September	147.25	144.30	
October	179.80	135.90	
November	154.00	126.80	
December	155.80	132.30	
Average	153.30	133.40	

1/ 50 percent protein, bulk.

Source: Feed Market News, U.S. Department of Agriculture, Consumer and Marketing Service, Grain Division.

Table A19.--Average monthly price of menhaden meal 1/ East Coast and Gulf plants, 1974-76

Month	1974	1975	1976
	- - - -Dollars per short ton - - - -		
January	2/532.50	263.12	2/268.75
February	2/452.50	231.25	2/270.00
March	403.75	220.50	2/273.75
April	342.00	238.75	253.12
May	273.10	226.87	283.00
June	263.00	218.75	353.00
July	243.50	234.50	385.00
August	3/314.35	246.25	
September	275.50	259.00	
October	301.25	266.25	
November	297.50	2/269.38	
December	281.00	2/266.25	
Average 4/	276.07	239.14	

1/ 60 percent protein, bulk, as quoted by brokers at New York City.
2/ Nominal price.
3/ Asking price.
4/ Average weighted by monthly production of menhaden meal.

Table A20.--Average monthly prices of Peruvian fish meal 1/ f.o.b. East Coast ports, 1974-76

Month	1974	1975	1976
	- - - -Dollars per short ton - - - -		
January	2/	262.50	270.00
February	2/	231.90	270.62
March	2/	220.50	271.25
April	2/	240.00	270.62
May	2/	223.12	285.00
June	2/	216.25	344.00
July	2/	226.25	381.25
August	2/	255.83	
September	2/	259.00	
October	2/	265.00	
November	297.50	265.00	
December	278.50	265.00	
Average 3/	287.30	249.72	

1/ 65 percent protein, bulk, f.o.b., East Coast ports.
2/ Supplies exhausted, no quotes.
3/ Average weighted by monthly imports of Peruvian fish meal.

Table A21.--Average monthly prices of tuna and mackerel meal 1/, at Los Angeles, 1974-76

Month	1974	1975	1976
	- - - -Dollars per short ton - - - -		
January	453.00	240.00	219.27
February	390.00	226.87	225.75
March	301.88	211.50	230.04
April	274.50	4/ 225.00	5/ 229.36
May	281.25	4/ 226.50	5/ 237.00
June	242.25	4/ 231.06	5/ 298.14
July	207.90	5/ 233.21	5/ 326.32
August	2/ 269.25	5/ 239.63	
September	222.00	5/ 238.63	
October	240.00	5/ 220.50	
November	240.00	5/ 216.00	
December	240.00	5/ 219.82	
Average 3/	270.60	227.41	

1/ 60 percent protein, bulk as quoted by brokers at Los Angeles.
2/ Asking price.
3/ Average weighted by monthly production.
4/ Tuna only.
5/ Tuna only converted to 60 percent protein basis.

Table A22.--Ratio of Peruvian fish meal price 1/ to soybean meal price 2/, by month, 1974-76

Month	1974	1975	1976
	- - - - -Price ratio- - - - -		
January	3/ 2.77	1.90	1.98
February	3/ 2.58	1.83	1.94
March	3/ 2.52	1.74	2.00
April	3/ 2.62	1.82	1.98
May	3/ 2.28	1.73	1.76
June	3/ 2.38	1.65	1.76
July	3/ 1.66	1.69	1.83
August	3/ 1.89	1.78	
September	3/ 1.87	1.79	
October	3/ 1.68	1.95	
November	1.93	2.09	
December	1.79	2.00	
Average	1.80	1.86	

1/ 65 percent protein, f.o.b. East Coast ports, as quoted at New York City.
2/ 50 percent protein, bulk, wholesale at Decatur, Ill.
3/ Ratio of menhaden meal price to soybean meal price.

Table A24.--U.S. production of fish solubles, by month, 1966-75 average, and 1975-76

Month	1966-75 average	1975	1976
	- - - -Thousand short tons- - - -		
January	1.4	3.3	3.2
February	1.4	1.5	1.3
March	2.3	2.8	4.2
April	5.0	7.0	8.2
May	11.4	20.3	10.3
June	17.4	19.9	19.7
July	18.7	21.2	
August	17.5	14.0	
September	11.8	14.2	
October	8.8	14.8	
November	5.9	4.0	
December	3.7	4.7	
Total	105.5	127.8	

Note: Figures may not add to total because of rounding.
Data for 1976 are subject to revision.

Table A23.--Production, imports, and total supplies of fish solubles, 1953-75

Year	Production			Imports	Total supplies
	Menhaden	Other	Total		
	- - - - - - - - - Thousand short tons - - - - - - - - -				- - - -
1953	39.0	42.5	81.5	-	81.5
1954	56.3	58.8	115.0	3.6	118.6
1955	61.9	49.0	110.9	3.3	114.2
1956	72.8	56.0	128.8	3.0	131.8
1957	69.4	52.9	122.3	9.7	132.0
1958	72.5	57.7	130.2	14.6	144.8
1959	108.1	57.3	165.4	26.6	192.0
1960	65.8	33.1	98.9	3.2	102.1
1961	73.3	38.9	112.2	6.7	119.0
1962	85.2	39.4	124.6	6.3	130.9
1963	74.8	32.6	107.4	7.1	114.5
1964	68.7	24.6	93.3	4.5	97.8
1965	73.2	21.7	94.8	5.1	100.0
1966	60.8	22.7	83.4	4.3	87.7
1967	51.8	22.9	74.7	3.7	78.3
1968	53.2	18.6	71.8	1.8	73.6
1969	63.3	18.4	81.7	0.2	81.8
1970	71.9	23.1	95.0	.5	95.4
1971	91.5	19.7	111.2	.1	111.2
1972	104.1	30.3	134.4	.1	134.5
1973	104.4	33.1	137.4	.3	137.7
1974	102.9	34.3	137.3	-	137.3
1975	83.6	44.2	127.8	.1	127.9

Note: Includes homogenized condensed fish for 1953-63.
Figures may not add to total because of rounding.

Table A25.--Fish solubles prices, and price ratio of fish meal to solubles, 1952-75

Year	Menhaden solubles price		Menhaden meal to menhaden solubles
	Actual price	In 1972 dollars 1/	
	-Dollars per short tons-		Price ratio
1952	2/ 99.94	172.31	1.33
1953	2/107.50	182.57	1.24
1954	2/ 98.96	165.79	1.37
1955	2/ 75.00	122.99	1.81
1956	2/ 76.23	121.19	1.76
1957	2/ 93.23	143.39	1.39
1958	2/ 97.51	147.61	1.41
1959	67.62	100.51	1.89
1960	37.74	54.96	2.46
1961	47.25	68.20	2.48
1962	55.06	78.04	2.25
1963	63.08	88.11	1.99
1964	61.98	85.24	2.12
1965	58.28	78.42	2.89
1966	70.74	92.16	2.28
1967	63.24	80.03	2.16
1968	52.93	64.10	2.74
1969	49.60	57.20	3.51
1970	51.88	56.79	3.56
1971	47.30	49.26	3.33
1972	43.45	43.45	4.27
1973	134.88	127.34	3.54
1974	89.71	77.20	3.08
1975	66.40	52.54	3.60

1/ Actual price divided by the implicit price deflator for GNP (1972 = 100).
2/ Simple average.

Table A26.--Average monthly price of menhaden solubles 1/, f.o.b. East Coast plants, 1974-76

Month	1974	1975	1976
	-Dollars per short ton-		
January	159.00	86.25	4/ 75.00
February	165.00	77.50	4/ 75.00
March	2/ 132.50	75.00	80.62
April	2/ 129.16	73.75	79.38
May	2/ 103.75	71.25	93.75
June	2/ 94.75	64.06	118.50
July	83.00	63.50	138.75
August	86.25	61.88	
September	80.50	66.00	
October	85.00	71.88	
November	85.00	3/ 73.12	
December	84.00	3/ 74.69	
Average 4/	89.71	66.40	

1/ In tank cars; prices quoted by brokers at New York City.
2/ Asking price.
3/ Nominal price.
4/ Weighted average.

Table A27.--Fish oil production, imports, exports, domestic use, and apparent stock changes, 1950-75

Year	U.S. production 1/					Imports 2/	Total supplies 3/	Exports 4/	U.S. industrial utilization 2/	Net changes in stocks
	Menhaden	Tuna and mackerel	Herring	Other	Total					
	Million pounds									
1950	76.6	6.6	24.8	52.7	160.7	15.1	175.9	76.0	5/	5/
1951	94.0	5.3	11.3	22.9	133.5	17.4	150.9	49.8	5/	5/
1952	96.7	5.6	8.1	8.2	118.6	15.6	134.2	44.0	5/	5/
1953	133.7	4.9	5.4	6.7	150.7	12.0	162.6	108.5	5/	5/
1954	139.8	4.4	5.7	12.3	162.2	13.0	175.2	141.6	5/	5/
1955	159.2	4.1	8.2	13.6	185.1	10.4	195.5	142.7	74.9	- 22.1
1956	168.2	5.3	13.7	10.1	197.3	10.7	207.9	140.9	81.3	- 14.2
1957	118.5	5.5	14.1	10.1	148.2	7.2	155.4	114.9	83.0	- 42.5
1958	128.0	4.7	13.2	15.7	161.6	4.9	166.6	94.0	67.5	+ 5.1
1959	154.7	4.5	15.0	9.0	183.2	6.8	189.9	144.5	58.6	- 13.2
1960	183.4	3.8	11.5	6.9	205.6	8.9	214.6	143.7	56.8	+ 14.1
1961	235.2	5.7	6.1	7.6	254.6	8.4	263.0	122.5	64.8	+ 75.7
1962	232.6	5.0	5.1	4.8	247.5	10.8	258.2	123.0	62.9	+ 72.3
1963	167.6	5.9	5.7	4.5	183.7	8.6	192.2	262.3	52.1	- 122.2
1964	157.7	4.8	10.3	4.2	177.0	11.8	188.8	151.5	47.7	- 10.4
1965	175.2	4.8	8.5	4.3	192.8	6.0	198.7	103.8	44.5	+ 50.4
1966	144.2	4.1	7.9	6.5	162.7	12.7	175.3	77.3	38.8	+ 59.2
1967	101.4	5.2	5.7	7.6	119.9	7.0	126.9	76.8	35.8	+ 14.3
1968	152.0	4.5	9.5	5.7	171.7	5.9	177.6	65.1	30.0	+ 82.5
1969	149.2	4.2	3.5	11.1	168.0	4.2	172.2	196.1	34.1	- 58.0
1970	186.3	3.5	5.4	10.9	206.1	5.5	211.6	158.8	31.4	+ 21.4
1971	244.0	4.9	5.9	10.2	265.0	7.5	272.5	229.9	26.5	+ 16.1
1972	167.0	5.0	5.1	11.3	188.4	9.4	197.9	193.2	29.8	- 34.5
1973	200.5	7.4	1.7	15.0	224.6	6.7	231.4	247.8	26.5	- 42.9
1974	217.0	6.8	6/	14.2	238.0	12.4	250.3	199.1	35.0	+ 16.2
1975	213.3	6.4	6/	25.9	245.6	11.3	256.9	191.8	36.8	+ 28.3

1/ Excludes whale and sperm oils.
2/ Excludes liver, whale and sperm oils.
3/ Production plus imports.
4/ Does not include exports of foreign merchandise.
5/ Not available.
6/ Included with other.

Table A28.--U.S. production of fish oil, by month, 1966-75 average, and 1975-76

Month	1966-75 average	1975	1/ 1976
	- - - -Million pounds- - - -		
January	0.9	1.8	1.6
February	.6	0.6	0.6
March	.7	.9	1.4
April	5.2	3.9	10.0
May	22.7	39.1	18.5
June	35.1	39.5	35.0
July	41.7	56.2	
August	38.9	36.5	
September	26.3	36.7	
October	14.6	20.7	
November	8.5	5.3	
December	4.2	4.6	
Total 1/	199.6	245.6	

1/ Preliminary.
Note: Figures may not add to total because of rounding.

Table A29.--U.S. exports of fish oil 1/, by month, 1966-75 average, and 1975-76

Month	1966-75 average	1975	2/ 1976
	- - - - Million pounds - - - -		
January	10.4	13.0	9.0
February	4.7	0.1	1.1
March	8.0	.1	3.2
April	3.8	4.7	0.1
May	5.4	.1	5.2
June	14.0	33.8	12.4
July	23.4	29.1	
August	28.0	33.9	
September	17.1	4.8	
October	19.3	14.2	
November	12.2	18.9	
December	17.3	39.2	
Total 2/	163.7	191.9	

1/ Excluding whale oil.
2/ Preliminary.
Note: Figures may not add to total because of rounding.

Source: Bureau of the Census.

Table A.30.--Industrial use of fish oil in the United States, by month, 1966-75 average, and 1975-76 1/

Month	1966-75 average	1975	2/ 1976
	- - - -Million pounds- - - -		
January	2.4	2.6	2.9
February	2.6	2.1	3.1
March	2.5	2.3	3.3
April	2.8	2.5	3.7
May	2.6	2.4	3.3
June	2.9	2.9	3.5
July	2.8	3.2	
August	3.0	4.2	
September	3.1	4.0	
October	2.6	3.9	
November	2.6	3.7	
December	2.4	3.0	
Total	32.3	36.8	

1/ Includes marine mammal oil other than sperm oil and some hydrogenated fat (vegetable and animal) and other fats and oils in process.
2/ Preliminary.
Note: Figures may not add to total because of rounding.

Source: Current Industrial Reports. Fats and Oils, Production Consumption and Stocks Serier: M20K (66-76). U.S. Department of Commerce, Bureau of the Census.

Table A31.--Wholesale prices of fish oil and soybean oils, and menhaden - soybean oil price ratio, 1950-75

Year	Menhaden 1/		Tuna and mackerel 2/		Soybean 3/		Menhaden oil to soybean oil
	Actual price	In 1972 dollars 4/	Actual price	In 1972 dollars 4/	Actual price	In 1972 dollars 4/	
	Cents per pound						Price ratio
1950	5/ 8.7	16.2	6/	6/	14.0	26.1	0.62
1951	5/14.0	24.4	6/	6/	16.8	29.3	.83
1952	5/ 7.2	12.4	6/	6/	11.0	19.0	.65
1953	5/ 6.8	11.7	6/	6/	12.4	21.0	.56
1954	5/ 7.8	13.1	6/	6/	13.3	22.3	.59
1955	5/ 8.2	13.4	6/	6/	11.6	19.0	.71
1956	5/ 8.8	14.0	6/	6/	13.2	21.0	.67
1957	5/ 8.9	13.7	7/ 6.9	10.6	12.2	18.8	.73
1958	5/ 8.0	12.1	7/ 5.4	8.2	10.5	15.9	.76
1959	7.6	11.2	7/ 3.2	4.7	9.0	13.3	.84
1960	6.2	9.0	4.2	6.1	8.8	12.8	.70
1961	6.1	8.8	4.8	6.9	11.5	16.6	.53
1962	4.2	6.0	5.0	7.1	9.0	12.8	.47
1963	6.7	9.4	4.9	6.8	8.9	12.4	.75
1964	8.8	12.1	5.9	8.1	9.2	12.6	.96
1965	9.3	12.5	8.0	10.8	11.2	15.1	.83
1966	9.4	12.2	7.3	9.5	11.6	15.1	.81
1967	6.4	8.1	5.2	6.6	9.6	12.1	.67
1968	4.7	5.7	3.2	3.9	8.2	9.9	.57
1969	5.8	6.7	3.1	3.6	9.1	10.5	.64
1970	10.2	11.2	5.0	5.5	12.0	13.1	.85
1971	8.8	9.2	5.6	5.8	12.6	13.1	.70
1972	7.2	7.2	5.1	5.1	10.6	10.6	.68
1973	11.6	11.0	6.5	6.1	19.8	18.7	.59
1974	25.4	21.9	12.3	10.6	35.8	30.8	.71
1975	14.0	11.1	8.7	6.9	25.4	20.0	.55

1/ Crude oil in tank cars; New York City, average weighted price.
2/ Crude oil, f.o.b. plants; Los Angeles, average weighted price.
3/ Crude, tank cars, Decatur, Ill., average price.
4/ Actual price divided by the implicit price deflator for GNP (1972=100).
5/ f.o.b. Baltimore; simple average price.
6/ Not available.
7/ Simple average.

Table A32.--Average monthly prices of menhaden oil 1/, f.o.b. East Coast plants, 1974-76

Month	1974	1975	1976
	Cents per pound		
January	21.0	25.0	3/
February	21.2	2/ 20.0	3/
March	23.2	3/	15.2
April	25.7	3/	15.2
May	3/	13.5	15.4
June	25.0	13.0	15.4
July	25.4	13.5	18.0
August	26.0	14.6	
September	25.0	15.0	
October	24.9	15.2	
November	26.0	15.2	
December	25.0	15.5	
Average 4/	25.4	14.0	

1/ Crude oil in tank cars; prices quoted by brokers at New York City.
2/ Nominal price.
3/ Supplies exhausted, no quotes.
4/ Weighted average.

Table A33.--Average monthly price of tuna and mackerel oil 1/, at Los Angeles, 1974-76

Month	1974	1975	1976
	Cents per pound		
January	7.1	15.5	7.6
February	9.0	15.5	8.0
March	12.0	10.0	2/
April	2/	3/ 7.2	8.0
May	11.0	3/ 7.4	2/
June	11.0	3/ 7.5	2/
July	12.3	3/ 7.5	2/
August	12.8	3/ 7.5	2/
September	13.0	7.6	
October	14.0	7.7	
November	15.3	7.1	
December	15.4	3/ 6.8	
Average 4/	12.3	8.7	

1/ Crude oil, f.o.b. plant; prices quoted by brokers at Los Angeles.
2/ Supplies exhausted, no quotes.
3/ Tuna only.
4/ Weighted average.

Table A34.--Average monthly prices of soybean oil 1/, 1974-76

Month	1974	1975	1976
	Cents per pound		
January	28.6	33.6	16.2
February	36.4	29.4	16.3
March	30.2	29.1	16.6
April	28.2	28.2	16.3
May	29.4	23.6	15.8
June	31.6	23.3	17.3
July	40.5	27.5	20.6
August	43.3	28.4	
September	40.7	24.3	
October	42.8	21.4	
November	40.4	18.9	
December	28.0	16.8	
Average	35.8	25.4	

1/ Crude, tank cars, f.o.b. at Decatur, Ill.
Sources: Fats & Oil Situation, USDA.

Table A35.--Ratio of menhaden oil price 1/ to soybean oil price 2/ by month, 1974-76

Month	1974	1975	1976
	Price ratio		
January	.73	.74	3/
February	.58	3/	3/
March	.77	3/	.92
April	.91	3/	.93
May	3/	.57	.97
June	.71	.56	.89
July	.63	.49	.87
August	.60	.51	
September	.62	.62	
October	.58	.71	
November	.64	.80	
December	.66	.92	
Average	.68	.66	

1/ Crude, tank cars, f.o.b, at New York City.
2/ Crude, tank cars, f.o.b. at Decatur, Ill.
3/ Not available, menhaden oil no quotes.

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